REMARKS

The above amendment and these remarks are responsive to the Office Action of Daniel J. Chung mailed 28 March 2003.

Claims 1-30 are in the case, with claims 20 and 22-25 allowed and claims 6-13 objected. Claims 1-5, 14-19 and 21 have been rejected. Claims 26-30 are newly presented, corresponding to objected claims 6, 7, and 11-13, respectively.

Drawings

Applicants submitted formal drawings to the USPTO on or about 14 Jul 2003.

35 U.S.C. 102

Claims 1-5, 14-19 and 21 have been rejected under 35 U.S.C. 102(b) over Pendred (U.S. Patent 3,600,513).

Applicants traverse, with the following explanation.

Applicants' application does share a number of similarities with Pendred. This includes filling a polygon using rectangular shapes, creating fill shapes along the border of the polygon, overlapping adjacent border stripes, and seeking to speed up the artwork generation process (i.e. reduce the time required to create a 'master'). These similarities are not surprising since artwork machines have been utilized for at least 40 years.

However, there are at least two distinctions with respect to Pendred which allow applicants to fill a polygon with a minimum number of rectangles:

1. merging border segments; and

2. switching from (i.e., "and then") bordering to orthogonal filling.

Applicants' claim 1 states [with emphasis added, to highlight the distinctions with respect to Pendred.]:

1. A method for filling a polygon with a <u>minimum number of rectangles</u>, comprising:

bordering said polygon, including:

selecting a starting border width; and

merging border segments where possible; and then orthogonally filling.

Applicants' invention provides a fill algorithm that will generate a minimum number of fill rectangles. Pendred does not. In fact, Pendred's algorithm as described in column 1, lines 43-51, will inherently produce more border segments since his border segments get narrower as they approach the polygon outline. Modern artwork designs contain large numbers of polygon shapes and these polygons can be very diverse in shape (e.g. some polygons with very small acute angles at the vertices mixed in with others with very large obtuse angles). Previous fill algorithms were optimized for particular varieties of polygons. Applicants have provided an algorithm which will work well with all varieties of polygons.

Applicants' claim recites merging border segments. Pendred does not teach such. Merging border segments is integral to minimizing the number of border segments.

The Examiner characterizes Pendred as teaching this merging with respect to "corners of border or outline image 80", and refers to several figures and portions of the specification. Applicants find in these referenced figures and specification no teaching of merging, and traverse the Examiner's characterization of Pendred as teaching such.

Applicants' claim also recites switching (that is, "and then") from bordering to orthogonal filling. Again, the Examiner characterizes Pendred as teaching this "and then orthogonally filling", referring to several figures and specification citations without specifically identifying the Pendred teaching of "and then". In fact, Pendred does not teach "and then". Switching to orthogonal fill as applicants teach and claim as soon as practical is integral in minimizing fill stripes.

In claim 2, applicants set forth three steps to their algorithm:

(1) Bordering the polygon, including merging border segments, and then
(2) Switching to orthogonal fill stripes; and
(3) Processing uncovered areas.

These three steps are performed for each input polygon.

Applicants' first step, including merging border segments, is not taught by Pendred, as previously discussed.

Applicants' second step, switching to (expressed as "and then" in claim 1) orthogonal fill shapes, is not taught by Pendred. Further, in column 6, lines 5-19, Pendred discusses a technique for optimizing the fill of what is essentially an "L" shaped polygon. If the polygon shown in Figure 4 were itself to be non-orthogonal in nature, the fill shapes generated by Pendred would be non-orthogonal as well.

Claims 3-5 depend from claim 1, and are distinguished from Pendred as discussed with respect to claim 2.

Further with respect to claim 3, applicants set forth three input parameters for the polygon fill algorithm:

(1) minimum stripe width

(2) maximum stripe width

(3) a Boolean flag, which when true, activates the logic to merge adjacent borders

These parameters are introduced due to their importance in controlling the size and quantity of fill shapes generated by the algorithm.

Pendred mentions stripe width on several occasions:

Column 1, line 45 - Here Pendred is referring to hardware tolerances dictating selection of a narrow stripe along the border of the polygon.

Column 1, line 48 - Here Pendred is stating that the further a stripe is away from the polygon border, the wider it may be.

Column 1, line 57 - Here Pendred is observing that the use of wide stripes will reduce machine plotting time since the number of fill shapes is minimized.

Column 2, lines 6-8 - This is a very confusing sentence, but it appears that Pendred is saying that the fill stripe width may vary depending upon a number of factors.

Column 5, line 75 - Here Pendred is stating that wide

stripes are preferred.

Column 6, line 44 - Here Pendred is stating that small widths are preferable for outlining a polygon when accuracy is vital.

In all these cases Pendred never mentions that minimum stripe width or maximum stripe width are input parameters to his fill algorithm.

These two values are important in applicants algorithm since they reflect the lower and upper limits of the aperture on the artwork machine. This is important because one should never create fill stripes which fall outside the physical threshold limits of the machine.

In contrast, Pendred presumes an artwork machine with a fixed set of reticles (refer to Figure 3). Hence he is only concerned with choosing from the finite set of shapes available on the current reticle wheel.

So far as the merge adjacent borders flag is concerned, Pendred never makes mention of the ability to merge borders or to control such activity via the use of a flag.

For the purpose of this response, and inasmuch as the Examiner has concluded that claims 14-19 and 21 are similar in scope to claims 1-3, the above discussion of distinctions to be drawn with respect to claims 1-3 are applicable also to claims 14-19 and 21.

Applicants request that claims 1-5, 14-19 and 21 be allowed.

Allowable Subject Matter

Claims 20 and 22-25 have been allowed.

Claims 6-13 have been objected to as depending from a rejected base claim.

Applicants submitted in their previous response claims 22-25 corresponding to claims 8-10 and 13, respectively, with claim 22 redrawn in independent format incorporating the limitations of the base and intervening claims, and claims 23-25 depending from claim 22.

Applicants submit in this response new claims 26-30, with claim 26 corresponding to claims 6 and its parent claims 2 and 3; claim 27 corresponding to claim 7; and claims 28-30 corresponding to claims 11-13, respectively.

SUMMARY AND CONCLUSION

Applicants urge that the above amendments be entered and the case passed to issue with claims 1-30.

If, in the opinion of the Examiner, a telephone conversation with applicants' attorney could possibly facilitate prosecution of the case, he may be reached at the number noted below.

Sincerely,

R. G. Bednar, et al.

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